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Many company commanders whose units train at the National Training Center (NTC) find, when they attend a task force after action review (AAR), that the results are not as good as they had hoped. They find themselves wishing they had been aware during their train-up period of some of the lessons and tactical techniques they learned during the training at the NTC. Although most of them had looked through the old AAR packets from previous rotations, they had failed to appreciate the real value of those lessons.

The key to success is figuring out what can go wrong, then setting up a system to help prevent it from going wrong. The hard part, however, is knowing what to focus on, what works, and what doesn't. The only way to know that is experience.

The following advice is based on some "secrets" we discovered while serving as observer-controllers for more than 50 company teams at the NTC. We have arranged these lessons under the battlefield operating systems:

Maneuver

A major key to tank gunnery success is boresighting. Improper boresighting, or failure to boresight at all, is the

major reason gunners miss their targets at the NTC. Boresight devices must be calibrated and everyone must know how to use them. Commanders should see that the -10 manual is used by the numbers, and that boresighting is done often.

A boresight line can be set up with the LOGPAC (logistical package) operation, and the company master gunner can supervise the operation. The baseline should be placed near the maintenance team so that problems can be solved quickly. Vehicles can also boresight from hide or firing positions; all they need is a target at a known range, such as a target reference point (TRP) or a VS-17 panel.

If a company occupies a position at night, the first boresighting can't wait until morning. A target or panel should be set up in a central location that is visible to all sights, both day and night. An example might be a .50 caliber ammunition can filled with charcoal for a thermal signature while a flashlight taped to the stake provides a daylight signature.

A tank commander uses a flashlight to help him see the aiming point of the MBD (muzzle boresight device). The crew uses the standard boresighting procedures in the -10 manual. Adjusting the thermal imaging sight is critical, and the focus must be clear. To make sure the thermal is properly adjusted, one of the combat service support vehicles can

go out to 5,000 meters, then drive slowly back to the position. The gunners should have no trouble distinguishing the target vehicle.

MILES equipment should be boresighted as often as possible. For the BFV-mounted TOW, this often means re-verifying the boresight each time the vehicle halts. MILES gunnery should be performed in each assembly area and on each battle position to verify that each system can still kill vehicles at extended ranges.

Tank crews that do only MRS (muzzle reference system) updates instead of boresighting don't do as well as those that boresight often and then conduct MRS updates from their fighting positions.

Designated tanks and fire support vehicles (FIST-Vs) should use their lasers against the opposing force (OPFOR) as they move into the engagement area, announcing the range so that Bradley fighting vehicles (BFVs) can open fire at trigger lines with company or platoon volleys. Good cross-talk between BFVs and tank leaders will allow the BFVs to open fire at maximum range with their TOWs. The recommended trigger lines at the NTC are 3,000 meters for TOWs, 2,500 meters for tanks, 1,700 meters for 25mm chain guns, and 900 meters for Dragons.

RETURN FIRES

When a vehicle makes contact with the OPFOR and is fired upon, it should return fire, even if the OPFOR is firing at 3,800 meters. This does three things: First, it may suppress the OPFOR gunner and make him break his missile track and miss. Second, it lets him know that someone saw him. And third, it lets the rest of the friendly team know exactly where the OPFOR is so they can help the first vehicle suppress or destroy him.

In a defensive fight, the sooner a gunner opens fire, the longer the enemy will spend in the engagement area (EA). For example, if he opens fire at 2,000 meters and breaks contact at 1,000 meters, his EA is only 1,000 meters deep. An enemy moving at 18 to 20 kilometers per hour will pass through that EA in about three minutes. If he opens fire at 3,000 meters, though, the EA becomes 2,000 meters deep and will take six minutes to cross.

Gunners should not be afraid to use battlesight once the enemy comes within 1,500 meters. The commander must establish the battlesight range on the basis of METT-T (mission, enemy, terrain, troops available, and time), and specify that range in the operations order. (Field Manual 17-12-1 recommends using Firing Table 105-A-3 to determine the best range.)

Possible OPFOR killsacks should be templated on the map. When a friendly unit enters a templated OPFOR killsack, it should change to movement by bounding overwatch and make the most of terrain driving.

Once a platoon occupies its battle position, its leaders should begin preparing range cards and sketches. Usually at the NTC today, all of a company's combat vehicles will

pull up to the crest of a hill and sit there for at least 30 minutes while the crews draw range cards and sketches. Of course, this procedure may let OPFOR observers locate every combat vehicle by unit type.

A better technique is to have only one vehicle at a time pull forward, do its range card and sketch, and then return to its hide position. A similar technique can be used when proofing holes. One vehicle should stay forward to proof them all. Tank and Bradley commanders or gunners may view their positions from another platoon vehicle.

Rehearsing is important, but this is often one of the first steps leaders omit when time is short. One way to do a rehearsal is to gather all the tank and Bradley commanders on the battle position and make sure they know the basic plan (paragraphs 2 and 3a), then have them bring their vehicles into hasty fighting positions and observe the EA. The commander's HMMWV and the maintenance and medical tracks can be used to drive through the EA, starting on the OPFOR side from as far as they can see (up to about six kilometers). The vehicles can move at 18 to 20 kilometers per hour and deploy from a single line to three vehicles abreast as the OPFOR is expected to do. Using his radio, the commander can explain what each friendly vehicle crew should see. As the target vehicles close to the trigger lines, they stop and mark the area with a TRP if this has not already been done. If any friendly vehicle notes dead space in its area, it should either notify the fire support team to plot fires in that area or mark the enemy side of the dead space for an obstacle.

BREAKPOINT

The commander describes to the company where the artillery rounds will land, where and when the artillery may shift fires, and where the breakpoint and final protective fires will be. Each crew must understand the TRPs and possible enemy courses of action. This type of rehearsal will take no more than an hour, and it will ensure that everyone understands the plan before they begin preparing their positions.

During assembly area or battle position preparation periods, a company absolutely must operate its command post (CP), stay on the task force net, and provide security. One technique is to set up the CP as described in the command and control section of this article, manning the radios in shifts with the fire support crew and medics. The commander, the XO, and the first sergeant can also take turns in the CP. The mechanics and the headquarters vehicle crews can perform external security around the CP and the trains vehicles.

One man, usually the commander's or the XO's gunner, can man the weapons in the hatch of one of the tanks or BFVs while two other soldiers with night vision goggles and M16 rifles walk the internal perimeter. The CP coordinates the starting of vehicles and conducts communication checks on either FM or wire at least every 30 minutes.

Load plans require attention. While the M-2 Bradley and the M-1 tank are not spacious at best, a poor load plan can make performing routine tasks both difficult and dangerous. Whatever load plan is used, it must be enforced. The commander must not allow a vehicle to leave the assembly area until its load plan is straight.

The load plan must include an opportunity to redistribute stored ammunition. This can be done only in concealed positions (turret-down or hide) if the vehicles have them or between positions as they move.

Mechanized infantry teams must have contingency plans for vehicles that are damaged or that have to be deadlined for maintenance during an attack. Soldiers must know exactly which equipment and personnel are to be shifted to other platoon vehicles and what and who is to stay on or with the vehicle that is left behind. The company team must help platoons that do not have the vehicles to take care of all of their important equipment and personnel. A recommended technique is to have the company executive officer or maintenance track pick up stranded soldiers and their equipment to get them to the battle.

Thermal acquisition is a problem for most units during live fire and force-on-force training. Crews expect to see the burning barn doors they saw on Table VIII. Crews at home station should be trained to acquire real vehicles and plywood targets under such adverse conditions as smoke, dust, and a simulated chemical environment.

Tank-killer crews and platoons are key to success in the defense. Thus, if a platoon or several crews are extraordinarily skillful at gunnery, they might be positioned to cover the most decisive sector of the unit's engagement area. Killer crews often prove to be a decisive factor in a company's success. In fact the killer vehicles at the NTC are almost always those that fire the most rounds.

Usually, the crews that hit at 2,500 meters or more were trained at their home stations in long range gunnery techniques. A unit's gunnery training for both MILES and live fire, therefore, should incorporate ranges at and beyond the planning ranges.

When the commander applies the *troops* portion of his METT-T analysis, he should consider his weapon systems not only by number but by quality as well. The best shooters (top gun platoon, most successful in previous battles, and the like) should be put in the best position to do the most killing.

TRPs should be standardized throughout the unit. Decoys should be placed throughout the battle position to draw fire and deceive the OPFOR as to the size of force that confronts him.

Intelligence

Commanders often lose sight of the fact that a dismounted infantryman is one of the best intelligence gathering sources on the battlefield. When used as an observation post he

can locate enemy patrols and troops massing for an attack or warn of an impending air attack.

In the offense, troops should be dismounted to clear defiles, broken terrain, and other possible ambush locations. A dismounted soldier is much better able to locate the enemy and pass on his disposition than the crew of a vehicle that blunders into an ambush or a kill sack.

Any intelligence that is received over the task force net should then be disseminated to the Bradley and tank commanders, along with any intelligence the fire support team gets over its net that will help the company track the battle.

Leaders must enforce operations security. In the defense, each position must be policed to ensure that garbage, excess Class IV supplies, tools, and ammunition are not left lying around. An improperly policed position often gives the enemy visual clues that will help him spot it.

Most defensive positions are already known to the OPFOR before he crosses his line of departure. If a unit stays in or around a position for any length of time, OPFOR reconnaissance teams will soon pinpoint the location, and reconnaissance elements will be sent to verify it.

Infantrymen and tanks should be used to augment the scouts. Infantry squads can conduct patrols to verify OPFOR presence; tanks can provide needed thermal capability and firepower; both can man OPs and provide a forward screen. Each infantry platoon should be trained to perform scouting missions.

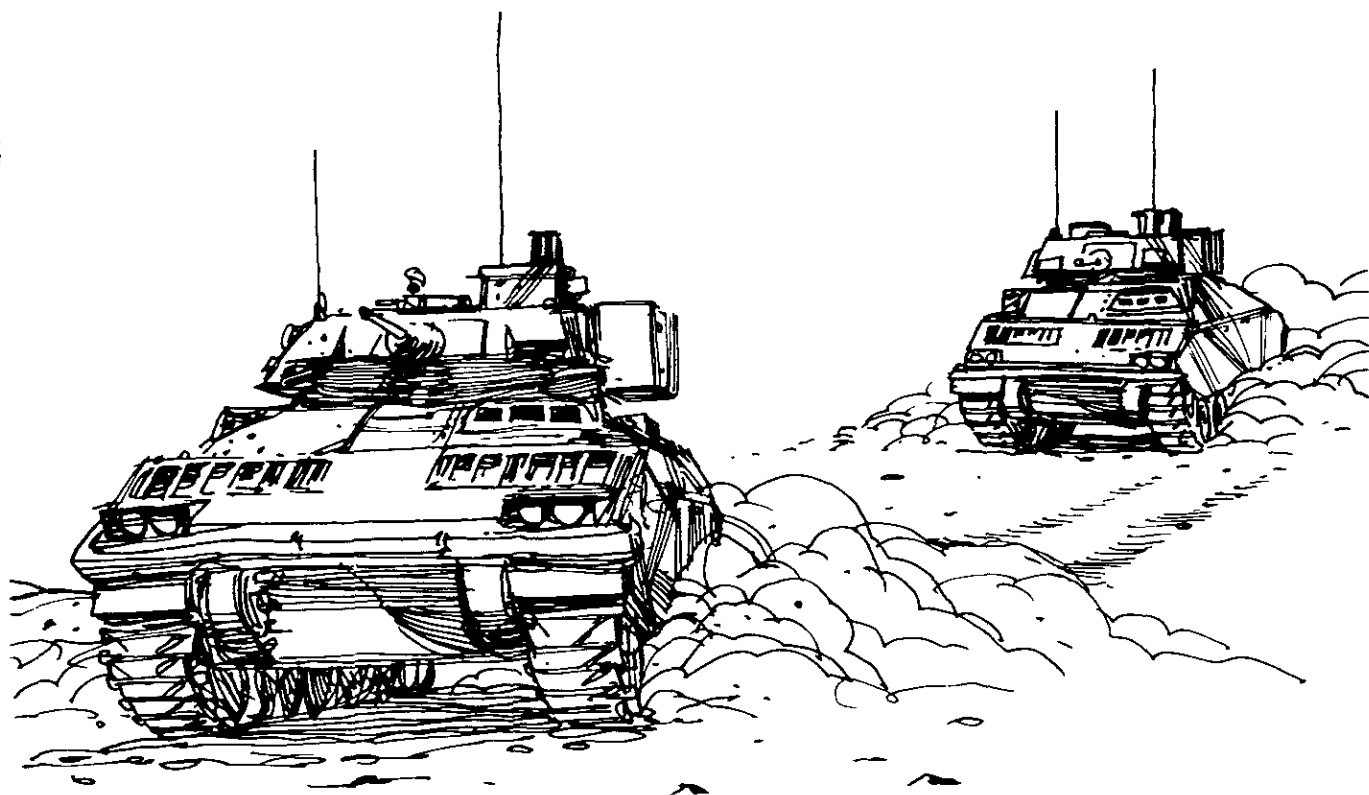
Units should patrol vigorously during limited visibility and maintain a vigilant watch. The OPFOR scouts do as well as they do at the NTC partly because more than half of the soldiers in the units they locate are asleep. Many of the others are not making use of their thermal sights, or those at the OPs are not paying attention. One way to make soldiers more vigilant is to put a bounty on the head of any OPFOR scout they capture.

Fire Support

A tank or a Bradley should never be sent into an area where an artillery round can do the job. If the artillery is not ready to shoot, a unit should wait — unless it has a tremendous numerical advantage and can provide effective internal overwatch. A unit that charges into an OPFOR position with no effective overwatch or fire support ensures that its vehicles will be destroyed.

The company fire support officer must attend all task force operations orders briefings as well as backbriefs with the commander. He is the obvious choice to replace the company commander until the XO can take charge of the battle. He probably knows more about the task force's plan than anyone else in the company.

The FSO is also an integral part of the maneuver commander's fire plan. He must help the commander establish his battle position, and he must develop his own



fire support plan on the basis of the commander's intent. He should develop a fire support execution matrix and a target list and pass both to all the platoon leaders and attached units. He should brief the fire support portions of his commander's OPORD, use lasers on targets for range determination, help site obstacles using his targeting system, and provide expert assistance on when and where the artillery should be called on to fire.

Maintaining the fire support vehicle (FIST-V) is usually a problem. The task force must have FIST-V mechanics and prescribed load lists at their unit maintenance collection point (UMCP) or field trains.

Mortar illumination should be planned for and used in the defense. This illumination is invaluable to Dragon gunners (who have no night sight capability for their MILES) and for dismounted infantrymen. The illumination also helps Bradley and tank commanders acquire targets without looking through the vehicles' thermal sights. In the offense, mortar illumination should be set to burst on the ground on known enemy locations. This will blind enemy gunners and help a unit's navigational efforts, especially at night.

Air Defense

Stinger teams, currently mounted in HMMWVs, cannot survive alongside tanks and Bradleys. To get them under armor in a mechanized infantry company, the commander should put the Stinger gunner with the XO and in a tank company, with the FIST chief. He must bring along his AN/PRC-77 radio, which should be set on the division early

warning (DEW) net or on his platoon net, depending upon unit SOPs. The gunner can then monitor or talk on the company net on the vehicle in which he is riding.

The maneuver commander should designate air TRPs in the defense. These TRPs should be well-defined terrain features such as hilltops that everyone can see and focus their fires on.

The senior air defender in support of a company (a section sergeant or team chief) should be required to develop an air defense employment plan that supports the company scheme of maneuver and mission. He should brief the plan at the company OPORD sessions and also instruct the company's leaders on the proper methods and techniques of employing small arms or organic weapons against an OPFOR air attack.

When the commander conducts his METT-T analysis, he should consider the air defense priorities on the basis of the criticality, vulnerability, recuperability, and expected air threat to the company.

Although such air defense assets as Stinger teams and Vulcans may not be attached to an infantry company, they should be integrated into the commander's defensive fire plan. Since thorough coordination is necessary to a cohesive defense, air defense team leaders should attend the OPORD sessions to understand the commander's plan as well as to brief him on their intent.

Certain soldiers should be designated to act as air guards during periods when the unit is buttoned up against artillery fires or is in MOPP (mission oriented protective posture) IV. Accordingly, dismounted infantry and company trains personnel are usually in good positions for spotting enemy

air when the rest of the unit cannot.

If OPFOR air is active in a company's sector, a leader should not try to cover his position with smoke for camouflage. By doing so, he is more likely to pinpoint his position and give the OPFOR pilot a marker to focus on.

A stationary vehicle is much harder to spot from the air than a moving vehicle. It is also easier to use small arms for air defense from a stationary vehicle.

Mobility and Survivability

A proven technique for starting work on a defensive position before a unit occupies it is to have the soldiers fill sandbags during the hours of darkness in their assembly areas. The filled sandbags can be carried in the bustle racks of BFVs and tanks and on the BFVs' trim vanes.

The biggest constraint in emplacing a minefield is manpower. Armor and infantry soldiers, therefore, should be trained to emplace wire obstacles and minefields, and their platoon and squad leaders to mark and record minefields on DA Form 1355-1-R. An engineer team can follow, or go back later, to arm the mines. Each infantry carrier should carry a basic load of wire and mines, and each tank platoon and infantry squad should carry a picket-pounder for emplacing wire obstacles and TRPs. In addition, emplacing obstacles should be included in the company priority of work.

When digging fighting positions for armored vehicles, a dozer operator can mark the roof support of the bulldozer with chalk to indicate the depth for each vehicle. This technique gives the operator a rough idea of how far to dig before he proofs the hole.

The commander should assign responsibility for digging his, the XO's, and the fire support team's positions to the platoon leaders. The FIST-V is one of the most vulnerable vehicles and should be dug in first. (It is usually the last.) Obviously, the company won't get any fire support if its FIST-V is destroyed in the first enemy artillery barrage.

A dozer chief's job at company level should be to pick up the dozers from one unit and make sure they are passed to the next. (He does not need to stand over the dozers and watch them dig holes. That's the tank or Bradley commander's job.) Then he should make sure the dozers are passed from platoon to platoon, maintain a status board of their progress, and report that progress to the task force TOC at least every two hours. He should make sure maintenance and fuel is being provided for the dozers by the engineer company headquarters and record the appropriate times. Most of this coordination and reporting can be done by FM radio or wire.

Commanders must physically site in obstacles to make sure they support the direct fire plan, and place stakes out to show engineers their location. The engineers will decide what type of obstacle to put in each location on the basis of what it is to accomplish. A good time for a commander to mark obstacle locations is when he drives around the

engagement area looking for dead space.

Each obstacle should have a specific purpose and should be placed where it will best suit that purpose. Obstacles intended to hold the enemy are little good if they are beyond effective direct fire range or too close to friendly troops. Obstacles intended to slow the enemy while a unit withdraws should be no closer than 1,000 meters.

A unit that is given the responsibility for guarding an obstacle and closing a lane should consider rehearsing the action, the signal to arm, and the execution. Signals should be established — primary (radio), alternate (two green star clusters), and tertiary (if a soldier sees six or more enemy vehicles). Redundancy should be built in.

Tanks and Bradleys should be prepared to breach simple mine and wire obstacles without assistance. Every vehicle should carry wire cutters, a grappling hook with 75 feet of rope, a mine lasso (50 feet of rope to loop around more than one mine and pull them out with a grappling hook). Each infantry platoon should have its own breach kit consisting of at least two pairs of wire handling gloves, two concertina wire bolt cutters, two rolls of engineer tape, two VS-17 panels, and two grappling hooks.

Before telling the task force his unit has a bypass in an OPFOR obstacle, the company commander should clear through it as far as possible to make sure the bypass doesn't lead into another obstacle or a killsack.

Combat Service Support

In dealing with combat service support (CSS), all company commanders must consider the way the headquarters section is to be organized for combat. One successful technique is to have the first sergeant command the maintenance track. This allows him to provide responsive logistical support and communications, and it puts a communication specialist and a hull and turret mechanic under armor. Since the maintenance track is authorized only one radio, another radio or auxiliary must be taken from a HMMWV and mounted on the track. A mount can be ordered through Class IX supply.

The company supply sergeant must know what is required for each vehicle or squad and what is available. He should attend company orders, or at least be briefed by the first sergeant or the XO. He should keep a status book that lists not only all the personnel (battle roster) but also the prescribed load list, medical, and supply items that constitute basic loads and standard resupply packs. This book can be used to plan and cross-check the items the company orders. Each company supply sergeant should have an identical book. Tank company books must include BFV parts, and infantry company books must include tank parts.

Company CSS elements must conduct rehearsals just as the combat elements do. The first sergeant should conduct a rehearsal ensuring that each evacuation and maintenance vehicle has a strip map with every combat vehicle location shown (including attachments or other units sharing the

battle position — the battalion commander or S-3, for example), the location and route to the company collection point (CCP) and to the task force collection point. The drivers should practice finding their vehicles and driving the routes in daylight and darkness, in MOPP IV, and in MOPP IV at night.

To be responsive, the supply sergeant must maintain contact with his unit. One technique is for the commander to mount a radio in the supply truck (under the truck commander's seat) and give him the OE-254 antenna to set up. Another technique is to have the supply sergeant co-locate with another vehicle in the field trains that monitors the administrative/logistical net, usually the field trains CP. As the company calls in its statistics or sends reports, he can begin planning resupply.

When a unit is preparing prestocks of ammunition, empty crates can be used to protect the sides and top of the cache. The empty crates are filled with dirt and stacked to form a bunker. The rounds are placed inside and the front covered with additional boxes. (See "Survivability and the Tank Platoon Defense," *ARMOR*, January-February 1989.)

Preventive maintenance checks and services must be done daily and done properly. Drivers must clean out air filters and drain fuel filters often.

A signal for priority vehicle evacuation requirements must be worked out. One such signal is to hang a VS-17 panel on the friendly side of a vehicle. Prior to withdrawing from a defensive position, leaders must check to make sure they are not leaving any wounded or disabled crew members behind.

The company CSS planner must requisition additional filters for NBC protective masks any time the unit is attacked by an enemy blood agent. One technique is to have the supply sergeant in the field trains with a requisition form already filled out and ready to be submitted when the unit detects such an attack.

In refueling, the service-station method is the quickest. Tailgate resupply, especially for fuel, needlessly risks the loss of a tank and pump unit or a truck.

Casualty evacuation must be everyone's business. The first sergeant must manage this activity and if the primary evacuation vehicles are enroute to the forward aid station (FAS), he may need to use combat vehicles to transport casualties. The casualties should be consolidated and moved the shortest distance possible on combat vehicles.

Command and Control

Planning for an offensive operation should begin from the objective back to the line of departure, and must include such control measures as target reference points (TRPs), checkpoints, and battle positions on the objective.

TRPs must be easy to see and easy to remember. They must be identifiable during limited as well as good visibility. The following is a technique for a thermal TRP that was developed at the NTC: Take a 7.62mm ammunition can

and punch a hole about the size of a quarter in the top. Fill the can three-fourths full of diesel fuel. Insert a cotton or natural fiber type cloth in the hole and down to the bottom of the can. Close the can and light the cloth wick. Place an empty five-gallon oil can (with the top removed and six to ten air holes punched in one side and the top) over the burning can. The fuel in the ammunition can will burn for about 20 hours, thus heating the air in the five-gallon can and creating a bright thermal signature. A VS-17 panel can be added to the thermal TRP for daylight recognition and chemlights for passive identification.

In preparing orders and graphics, one way to make sure the operations order (OPORD) is quickly passed down when time is short is to give it to large elements at one time. For example, a company commander may issue his order to all his Bradley and tank commanders and to dismounted leaders as well as his platoon leaders and any attachments. Then a platoon leader may issue his orders to the entire platoon. Leaders must make sure every soldier in the company is well informed and understands his role.

At times, getting the order out presents a serious problem when time is extremely short. One technique is for the commander to give his subordinates the minimum essential information as quickly as possible. As soon as he has a better idea of how the battle will be fought, he can gather his leaders and brief them on the situation, the mission (the TF mission if that's all he knows), the way the task force commander sees the fight and his initial intent, the way the company will be deployed, and the tasks that must be done between then and X-hour. He can fill in the details later as he gets them and uses his OPORD to confirm information, make changes, and tie all the battlefield operating systems together.

A company CP should be set up so that orders and graphics can be reproduced and issued inside, out of the elements, and using light. (The only thing worse than not giving an order is to give it on the hood of a HMMWV at 0200 when it is 28 degrees, raining, and the wind is blowing the map away.) One way is to back the FIST-V up to the XO's M113 and use tarps and camouflage poles to construct an extension between the two vehicles. A medic track works well in tank companies, or the company commander's tank or Bradley can be used. The covers can be removed from the taillights to get white light. The bottom of the tarp must be secured to prevent light leaks.

Standard size map boards should be developed, and every vehicle's map board or map case should be identical. Then standard size overlays can be pre-cut and stored in empty ammunition tubes. This helps command and control when a leader has to jump to another vehicle. Map boards must be small enough to get into the hatch of a vehicle or to carry when dismounting.

The "chimpanzee drill" can be used to reproduce graphics for subordinates. The soldiers in the headquarters section can be trained to reproduce copies from the commander's original. The company master gunner or the commander's gunner can inspect them to ensure completeness. Allowing



every leader to copy his own, usually by a blue filter flashlight, leads to inconsistent graphics, bad reports, and confusion. At the least there should be a copy for each platoon leader, the XO, the FIST chief, the first sergeant, and the motor sergeant. The platoon leaders can conduct the same drill with their crews and provide an overlay to each squad leader or track commander.

Carbonless paper sets (NSN 7630-01-078-7148, paper, teletypewriter, five-page carbonless paper, 700 per set, \$29.74) work well for mass producing orders, matrices, fire plans, and the like. (A suggestion has been submitted to make and issue a preformatted execution matrix, fire support matrix, and fire plan/range sketch.)

Before deploying to the NTC, a company should make enough orders packets to last through the rotation. These should include OP order format, either five-paragraph or matrix, or both. A fire support matrix and CSS matrix can also be included. They can be stapled together and either the headquarters vehicle section or the HMMWV drivers can be trained to fill them in so that when the order is issued a copy can be handed to each leader along with the graphics.

At least two preprinted and laminated sketch cards or range cards should be made for each vehicle and dismounted fighting position. The extras will come in handy if the originals are lost or damaged.

Commanders must add company TRPs, checkpoints, engagement areas, and other control measures to the task force graphics to improve his maneuver plan and facilitate control.

Every order should include a jump plan, even if it is SOP. For example, if the commander's or the XO's vehicle is disabled, they jump to 11 then 21 then 31; if the fire support vehicle goes down, the first sergeant will pick the FSO up in the maintenance track; the mechanics use the commander's HMMWV and cross level to the M88. Tanks and Bradleys with limited fire control problems can be used as command, control, and communication vehicles even if they cannot fire their main weapons.

A company commander should get behind every weapon

system and talk to every gunner to make sure everyone understands his intent as well as to make sure he understands the capabilities and limitations of each system.

Range cards and sketches should be used as backbriefing tools. Bradley and tank commanders might describe the engagement area using a sketch and relating it to the ground. These sketches should be updated constantly with new obstacles, artillery targets, and the like.

A rehearsal kit is a good item to help convey the commander's intent during operations orders. A recommended rehearsal kit includes a 25mm ammunition can in which to store supplies; a roll or ball of string or twine to put grid lines on a terrain model; laminated 3x5 cards on which to put objectives, battle positions, and suspected enemy locations; colored tempera paint to portray the colors of the map on the terrain model; and miniature company vehicles to reflect locations in movement and on the battle position.

Using such a rehearsal kit will improve the subordinate leaders' understanding of the mission and eliminate much of the confusion that usually prevails after an oral OPORD.

Leaders must have positive control over all their elements at all times. Platoon leaders must be able to talk to their dismounted section as well as their mounted elements.

Any time a leader dismounts in an offensive operation, he should have binoculars, a map, and a radio. These items will allow him to let his boss know where he is and what is going on, and to call for fire if targets are identified.

Using a single company radio net can speed the unit's reactions in both offensive and defensive operations. On a single net, discipline is the key. The only time it is used is to report contact, send enemy locations, or for safety or self preservation. The platoon nets are used as spares to reduce electronic warfare effects and to discuss items other than enemy contact. (Example: "Red 2 this is Red 1 — meet me on one, over." "Roger, switching, out." Then, Red 1 and Red 2 switch to the first platoon frequency and talk, then return to the primary frequency.)

The company commander must talk to his company, while the XO, the battle captain, talks on the task force net. A task force commander who requires company commanders to talk to him directly doesn't understand what fighting for information is like. The company commander must be given time to develop the situation and report through the company XO.

Some commanders wonder where to put the master gunner when the battle starts. One technique is to place him in the commander's HMMWV with the radios preset to the company and task force nets. He can be used as a relay station for both the command net and the administrative/logistical net. He can also help in casualty evacuation. The first sergeant riding in the medic or maintenance track can bring wounded off the BP or to a company collection point. Then the master gunner can pick them up and take them to the battalion aid station, allowing the first sergeant and the medic to get back up front.

Each team vehicle needs its own map and radio. The

maintenance M113 and the M88 in particular need to be able to navigate since they are frequently sent on missions alone to recover broken equipment at night. It is a problem when the driver of one of these vehicles is lost or disoriented at night and cannot be found for several days, often because he either didn't have a map or couldn't call his unit because he didn't have the next day's signal operation instructions.

While wire is usually plentiful, wire reels are often in short supply. One technique is to have a welder make kite string reels from half-inch pipe. Each reel will hold more than one-fourth mile of wire. The recommended issue is one per vehicle for hot loops, one per M8 alarm, and one per dismounted position. Its shape makes reeling and unreeling the wire easy and lets the platoon use its DR8 reels of wire to run back to the company CP or OP.

Reports should be made by TRP rather than 8-digit grid coordinates. Since everyone knows the TRP locations by sight, referencing enemy locations by TRP saves the time it takes for the sender to formulate and the receiver to locate the grid on his map. This technique saves time and eliminates much confusion, especially during periods of limited visibility.

The push-button pre-sets on the VRC-12 radios or SINCGARS should be standardized to facilitate the jump plan. Buttons 1-10 should be the same on each vehicle.

Finally, the desert night is unkind even to the best navigators. To avoid getting lost trying to find the TF TOC in the middle of the night for an OPORD session, the company commander should go to the TOC at last light, arrange for someone to wake him, and get some sleep before the order is issued. Or if he must stay with his company, he should reconnoiter the route to the TF TOC in daylight, mark it, and leave early enough to allow for error.

Nuclear, Biological, and Chemical

The NBC NCO must make sure replacement filters and suits are ordered after each chemical operation. Once a suit and filters are contaminated, they must be changed.

A company should not stop fighting to conduct M-256 kit tests and then tie up the command net with an NBC-1 report. One vehicle per platoon and backups, as well as the headquarters section, should be designated to do this. The motor sergeant in the maintenance carrier can do a test while the tanks and Bradleys fight, and only the needed information should be sent on the company net. Then the NBC NCO works up an NBC-1 and sends it to the task force on a net other than the TF command net (the operations and intelligence net is the recommended one). The TF then notifies the commands as necessary.

The M-8 chemical alarm must be emplaced by each platoon for each mission. A useful technique is to have a

soldier designated to emplace the alarm each time a platoon establishes a hasty position, and move the detector unit each time the wind shifts. Furthermore, he should dig the alarm in if it is emplaced forward of friendly troops. The NBC NCO should check each alarm when the company is in a defensive position or an assembly area to make sure it is operational and properly emplaced.

Since it takes at least 32 minutes to perform unmasking procedures with the M-256 kit, it is often better for the soldiers in a unit to fight dirty than to focus on getting out of their masks during the fight.

A company must have a battle drill for reacting to chemical attack. Some soldiers should be designated to check for chemicals with M-8 paper and M-256 kits and other soldiers to perform hasty decontamination with M-11 bottles. The important thing is for each soldier to know his role in a chemical environment.

If there is a contaminated area in the sector, its boundaries must be marked. Otherwise, soldiers may have accidental contact with deadly chemicals when they mark TRPs or walk off dead space.

Each platoon and squad must be capable of conducting a chemical reconnaissance. Companies are rarely augmented with help from task force or chemical units. And even if a chemical unit is available for reconnaissance purposes, infantry and tank platoons still must be prepared to provide security.

At the NTC, units are frequently in MOPP IV. To prepare for this, units must train for it at home station by conducting *foot marches*, attacks (*mounted and dismounted*), defenses, and situational training exercises in MOPP IV. As the soldiers increase the time of training in MOPP, they will become more comfortable and better able to fight in this mode.

This article is a compilation of some methods and techniques that have proved successful at the NTC. We got our information from a number of excellent NCOs and officers who work for the NTC's live fire team and from rotational units as they plied their trade in the desert. The list is by no means all-inclusive, but we hope they help you when you come to the NTC — and more important, when you go to war.

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